Comparison of risk factors of Diabetes Mellitus type 2 between vegetarians and non-vegetarians in Kulim, Kedah

Abstract

The objective of this study was to compare the risk factors of Type 2 Diabetes mellitus between vegetarian and non-vegetarians aged 30 years and above in Kulim, Kedah. Socio-economic status, family history, anthropometric measurements, blood pressure, blood glucose, blood cholesterol, dietary intakes and physical activities were measured. Data was analysed by using Statistical Package for the Social Science for Window (SPSS) version 15.0 and the test used was Student t-test. Two days of 24-hour dietary recall data were assessed using a computer dietary analysis software program (Nutritionist-pro). Subjects consisted of 50 vegetarians (mean age: 46.8 ± 12.2 years) and 50 non-vegetarians (mean age: 55.8 ± 10.5 years). The mean monthly household income was RM2569.0 ± RM166.2 and RM 2111.2 ± RM 1257.3 for vegetarians and non-vegetarians, respectively. The mean total years of education was 9.2 ± 4.2 for vegetarians and 7.6 ± 2.6 for non-vegetarians. Most of the vegetarians were still working while most of the non-vegetarians were already retired or were housewives. There were less family members with history of diabetes in vegetarians than among non-vegetarians. Mean BMI for vegetarians was 22.98 ± 4.1 kg/m2 whereas mean BMI for non-vegetarians was 22.99 ± 4.3 kg/m2 and the difference was not significant. Mean body fat percentage was 28.0 ± 8.9% for the vegetarians and 28.5 ± 7.4% for non-vegetarians; the difference was not statistically significant. Body mass index (BMI) and body fat percentage did not differ by dietary pattern. The mean blood glucose level was 4.76 ± 1.02 mmol/L and 5.50 ± 1.24 mmol/L for vegetarians and non-vegetarians respectively, and it was significantly different ($p<0.01$). The mean of blood cholesterol for vegetarians was 4.46 ± 0.82 mmol/L whereas for non-vegetarians, it was 6.22 ± 1.02mmol/L; this difference was statistically significant ($p<0.001$). Mean systolic blood pressure of non-vegetarians was 129.6 ± 23.3 mmHg compared to 140.5 ± 21.6 mmHg for vegetarians and these were also significantly different ($P<0.05$). The mean diastolic blood pressure was 85.1 ± 12.0 mmHg and 89.3 ± 11.8 mmHg for vegetarians and non-vegetarians, respectively. There was no significant difference in diastolic blood pressure between the two groups. There was no significant difference observed for total energy and iron intake. However, vegetarians had a significantly lower intake of protein ($p<0.0$saturated fat ($p<0.01$) than non-vegetarians. A significantly higher intake ($p<0.05$) for carbohydrate, fibre, vitamin A, vitamin C and vitamin E was found in vegetarians compared to their counterparts. Examples of protein sources for vegetarians were tau-kua, tau-hoo, soya milk, lentils, peanut, broccoli and vegetarian meat-substitute. The total METs of physical activities was not significantly different between two groups. The mean total METs was 688.3 ± 1913.1 METs and 414.8 ± 664.6 METs for vegetarians and non-vegetarians, respectively. Therefore, the risk factors that were present in non-vegetarians but not in vegetarians were high blood glucose level, high blood cholesterol, high blood pressure, high fat intake, high saturated fat, high cholesterol intake and low fibre intake. Further studies with larger sample size should be carried out to further study the potential of a healthy vegetarian diet towards reducing risk of developing type 2 diabetes mellitus.01), dietary fat ($p<0.05$), cholesterol ($p<0.001$) and